

Friday, April 23, 2016 11:48:15 AM  
**Circuits Lab:**

**Purpose:**

**Hypothesis:** Ohm's law, Kirchhoff's law, resistor rules

**Procedure:** refer to lab manual p85-89

**Observations:**

Emf \_\_\_\_\_  $R_1$  \_\_\_\_\_  $R_2$  \_\_\_\_\_  $R_3$  \_\_\_\_\_

Measured with circuit unconnected.

Series, parallel, mixed

Draw the circuit

**Series:**

$V_t$  \_\_\_\_\_  $V_1$  \_\_\_\_\_  $V_2$  \_\_\_\_\_  $V_3$  \_\_\_\_\_

$V_t$  is terminal voltage of the battery, voltage when circuit is connected

$I$  \_\_\_\_\_  $I_1$  \_\_\_\_\_  $I_2$  \_\_\_\_\_  $I_3$  \_\_\_\_\_

$I$  is the current in/out of the battery

Currents are measure with resistor disconnected, then put ammeter to the resistor and wire(s).

**Parallel:**

$V_t$  \_\_\_\_\_  $V_1$  \_\_\_\_\_  $V_2$  \_\_\_\_\_  $V_3$  \_\_\_\_\_

$I$  \_\_\_\_\_  $I_1$  \_\_\_\_\_  $I_2$  \_\_\_\_\_  $I_3$  \_\_\_\_\_

**Mixed**

$V_t$  \_\_\_\_\_  $V_1$  \_\_\_\_\_  $V_2$  \_\_\_\_\_  $V_3$  \_\_\_\_\_

$I$  \_\_\_\_\_  $I_1$  \_\_\_\_\_  $I_2$  \_\_\_\_\_  $I_3$  \_\_\_\_\_

Brown Black Brown  $100\Omega$   
Green Blue Black  $56\Omega$

Yellow	Purple	Black	47 $\Omega$
Grey	Red	Black	82 $\Omega$

Analysis:

P87-88

$R_t = V_t / I$  compare to calculated from resistors

%error for each circuit

Series:  $R_t = R_1 + R_2 + R_3$

Parallel:  $1/R_t = 1/R_1 + 1/R_2 + 1/R_3$

Mixed  $R_t = R_1 + 1/(1/R_1 + 1/R_2)$

Kirchhoff's Laws discuss

Conclusion

Sources of uncertainty

Due April 28th ???